

DOCUMENT RESUME

ED 411 368

UD 031 903

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TITLE An Examination of Specialized Schools as Agents of Educational Change.
PUB DATE 1997-06-15
NOTE 28p.
PUB TYPE Reports - Evaluative (142)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Case Studies; Competitive Selection; *Educational Change; Equal Education; High Schools; Magnet Schools; *Mathematics Instruction; Minority Groups; Models; School Role; Teacher Expectations of Students; *Technology Education; *Urban Schools
IDENTIFIERS New York City Board of Education; *Specialist Schools

ABSTRACT

One suggestion for educational improvement is the implementation of specialized schools that offer specific training with a focus. New York and a number of other cities have turned to this choice to offer specialized schools of mathematics and technology. The movement is coordinated on a national level by the National Consortium of Specialized Secondary Schools of Mathematics, Science, and Technology (NCMSSST). This paper describes the NCMSSST as an organization, and the considers Stuyvesant High School, New York City, as a case study of this type of school. The NCMSSST consists of 15 schools at present. Stuyvesant, established in 1904 as a manual training school for boys, is a founding member of this group. It grew into a highly regarded academic institution and became coeducational in 1969. Admission is very competitive. Of the 11,000 students who indicated in 1996 that Stuyvesant was the specialized school they would like to attend, only 700 were admitted. About half the students are Asian, with 40% White, and only 10% either African American or Hispanic. However, 15% of each incoming class is admitted on the basis of diversity rather than test scores. Those who are admitted have a proven record of academic success and lifetime achievement, as both curriculum and teacher expectations support high achievement. The school adds much to New York City, offering an option for excellent students of all socioeconomic backgrounds. While there are some disadvantages, as discussed, and the school is open to some charges of privilege, it can serve as a model of excellence in public education and an example to other urban schools. Eight interviews and two Web sites are cited. Contains an annotated bibliography of 40 entries. (SLD)

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AN EXAMINATION OF SPECIALIZED SCHOOLS AS AGENTS OF EDUCATIONAL CHANGE

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Completed in fulfillment of the clinical project requirement for a degree in Educational
Administration
Teachers College, Columbia University

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6/15/97
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I. Introduction

As our country debates various solutions to its educational problem, many players have joined the fray. Politicians, business people and parents have all joined teachers, principals and school boards in the search for answers. These diverse parties often have conflicting views, but they all have a legitimate stake in the process. In truth, everyone in a society has an extreme interest in the improvement of our system of education. Often, people have been critical of the number of groups involved in debate; I would posit that perhaps there ought to be more. Everyone has a real stake in this debate. With this in mind, it is extremely important that all involved in the debate consider all angles of all options.

One of the most influential pieces in this debate was put forth in 1984 by the National Commission on Excellence in Education in *A Nation at Risk*. In this widely-read volume, this group examined the problems that had emerged in our educational system and suggested possible remedies. The book ended with a "call to action" that has energized the educational establishment and others around the task of improving education in the United States. The first two of these recommendations have gained much publicity, including the call for "Five New Basics" in addition to other, more diverse curricular offerings and "more rigorous and measurable standards." The five new basics encouraged expanded study of English, mathematics, science, social studies, and computer science, with an added emphasis on excellence in foreign languages and fine arts. They suggested that longer school days or expanded school calendars may result in the time needed to do this. Measurable standards would be the way to ensure that these more rigorous requirements would be met. In short, the commission pushed for more excellent schools with tougher requirements and standardized assessment to ensure that these goals are being met (p. 69-79).

Different groups have had widely divergent responses to what it might take to make the changes called for in the publication of *A Nation at Risk*. Some advocate systemic change, while others seek to leave the system as it is while emphasizing changes within the teaching profession itself. Often, choice is an answer that people reach as an ultimate solution. By providing an opportunity for parents and students to choose their school, people are betting that the competition will provide schools with the incentive to improve and diversify their program offerings to attract students. Families could shop for education as they would shop for groceries or a car. This method would allow schools that cannot compete to be weeded out, and it would require that schools have competent teachers that are well trained and effective. Often, these programs are supplemented by vouchers that would allow parents to spend their tax dollars in any school, public or private. Some states and local areas have turned their efforts towards charter schools, often founded by people outside of the educational establishment, who think that they can provide a more effective school experience. The hope is that these schools will attract students who may otherwise flee the public system for private schools that can offer what the larger, diverse public schools cannot.

Another solution that is growing in popularity around the nation is the implementation of specialized schools of all sorts. These schools are institutions that offer specific training with a focus. Often these schools are admissions based and have had much success by the measures discussed above. New York and a number of other cities have turned to this unique form of choice to combat some of these problems in the form of specialized schools of math science and technology.

This movement is coordinated on the national level by a group known as the National Consortium of Specialized Secondary Schools of Mathematics, Science and Technology. This group is becoming more important as it increases its outreach and

lobbying efforts in Washington. As the group works hard to spread the word and defend the interests of specialized schools all around the country, it is a movement that must be considered. These specialized schools are good examples of a solution that many would advocate for our educational system. They have many characteristics that people will embrace as effective and in keeping with the demands made by *A Nation at Risk*. They provide choice for those who want an education that yields excellent results. They provide a challenging atmosphere, and on the surface, excellent teachers. People who are accepted do not need to seek expensive private educations or vouchers from other sources. In these ways they are potential antidotes to the problems of inequity and resources that plague our system.

I was part of a research team that studied these schools and performed a case study of Stuyvesant High School in a document entitled, "'Private schools, essentially, in the public sector: An Examination of Stuyvesant High School and Other Specialized Secondary Schools of Mathematics, Science, and Technology'" (Hanford, Sanchez, Taylor, Wilson, 1996) The results of this study proved that these schools are worthy of a place in this debate.

As cities, towns and states consider the solutions that these schools can provide, they need a balanced perspective through which to view the options. These specialized schools, as is true with all angles of the education debate, are a double edged sword. The purpose of this piece is to consider these schools in a way that will allow policy makers and all interested parties to make an educated decision about specialized schools in their society. First we will examine the NCMSSST as an organization. Next, we will take an in depth look at Stuyvesant High School in New York City as a case study of this type of school. Finally, we will look at the pros and cons that are implied by this particular case; while Stuyvesant is certainly not representative of all schools, it is an apt example of some

of the issues that can arise. The purpose of this paper is not to reach a decision as to the value of these sorts of schools. Rather, it is to provide an even-handed portrayal of what these schools really can and do bring to a city that policy makers may use to evaluate specialized schools as options.

II. The NCMSSST

According to Carol Green (1996), past president of the Consortium and Assistant Principal of Bronx Science, the National Consortium of Specialized Secondary Schools of Mathematics, Science and Technology was founded in 1988 in New York City by the Stuyvesant, Bronx Science and Brooklyn Tech. Today, the group consists of 15 schools which developed primarily during three different eras. The original schools were trade schools in New York, schools that were designed to teach trades to young men to prepare them for the work force. The next group of schools came after the Cold War, when the United States began its well publicized emphasis on science and math education. The last group was spawned by the reaction to *A Nation at Risk*. These schools have historically been part of nation-wide reform efforts.

The schools have a lengthy mission statement that sets out ambitious goals for their association. This mission indicates that the schools really view themselves as active in reform efforts:

...to create synergies among schools engaged in educational innovation by shaping national policy, fostering collaboration, and developing, testing, implementing and disseminating exemplary programs. The consortium will serve as primary catalyst for the transformation of mathematics, science, and technology teaching and learning to enable students to meet the challenges of the future (Hanford, Sanchez, Taylor, Wilson, 1996, p. 3).

This statement certainly emphasizes the role of the schools on the national level. They are interested in the "transformation" of teaching, rather than its maintenance. Truly, they are a

group that deserves a prominent place in the debates around the improvement of teaching in general.

According to Green, the consortium takes this outreach very seriously. They host an annual conference for teachers and administrators to discuss issues related to science, math and technology that are open to member and nonmember schools. They also sponsor a conference that unites high school educators with university professors. Their journal can be purchased by anyone who is interested. Through these mechanisms, these schools have been attempting to have a real influence throughout their young association.

Furthermore, Green emphasizes the fact that they are looking to expand this influence. They seek to play a more active role in affirmative action rulings; this becomes especially important in light of court rulings in California and Texas since our conversation. The NCSSSMST seeks to "hire a small paid staff and open an office in Washington" (Hanford et al, 1996, p. 5). This will signal the fact that they intend to play a much more active role as a national group rather than a collection of schools largely defined by its most famous members. This effort is complemented by the groups ongoing strategic planning process (*Impacting Scientific...*, 1993, p. 3). Clearly, the NCSSSMST is beginning to play a more active role in the national attempt to improve education.

Obviously, these schools embody many of the proposed solutions illustrated above. Because they are admissions rather than neighborhood based, they represent the competitive aspects that many would like to see. After all, if they were not as successful as they are they would not attract applicants. They are attempting to influence education on a larger level, and these efforts are expanding quickly. In many ways, they provide a middle class alternative to the costly private schools that many feel rob our systems of the best and brightest.

No school symbolizes all sides of this issue more than Stuyvesant High School. While Stuyvesant is not necessarily representative of the NCSSSMST in all ways (and Carol Green was quick to caution us that it is not), it is unquestionably the most visible and acclaimed member. Often, rightly or wrongly, this is the school that others point to as the best in the country. It is also at the center of controversies that result from schools that are given special privileges within a public system. In this way, it makes a case study that highlights the very issues that need to be considered.

III: Stuyvesant High School

Stuyvesant High School was founded in 1904 as a manual training school for boys. It made a very subtle shift to more of a science and math school in the 1930s, and with this move it began to attract more high-achieving students. It then became a very competitive academic institution. It became coed in 1969 because of a suit by a young female student who did not want to have to travel from her Manhattan home to Bronx Science (a specialized school that was already coed) to get the best education the city has to offer ("Girl Challenges," 1969, p. 37; Tomasson, 1969, p. 57). In 1971, the schools' admissions test (the same test is used for all three specialized schools in New York) was upheld in court in the face of a legal challenge from one Manhattan district. The schools all aggressively lobbied to pass the Hecht-Calandra Law, which was implemented to maintain the test only admissions policy (Buder, 1971; Clines, 1971; Ronan, 1971). The legalization of this test has made the schools' admissions policies untouchable. No longer do people try to contest the validity of the test itself. Instead, recent programs have attempted to teach students to succeed on the test itself; Chancellor Crew just announced a new initiative designed to improve minority performance on the admissions test. In this way, the test has become fully institutionalized. Another example of the influence of the school is its prime location. As a symbol of this prominence it occupies a beautiful and exclusive plot of land

in Battery Park City overlooking the Hudson River and the Statue of Liberty. The \$150 million building itself is state of the art, containing an Olympic sized pool, a huge theater, escalators and fantastic laboratory facilities (Muschamp, 1993). Stuyvesant has historically occupied a position of true importance in the New York educational landscape.

The facts and figures back up Stuyvesant's claims of excellence. First and foremost in support of this claim is the fact that admissions is very competitive. Of the 16,000 students who took the exam for the specialized schools in 1996, 11,000 students chose Stuyvesant as the specialized school they would like to attend. Of these students, only 700 were admitted (Hanford et al, 1996, p. 10). John Ferrandino (1996), former head of New York City High Schools indicated that nearly half of these students come from Queens (long accepted as New York's middle class borough), and twenty percent come from private schools. Furthermore, the most represented school district in the city is District 2, the district that represents the wealthy Upper East Side. Renee Levine (1996), the Building Supervisor at Stuyvesant stated that the half of the students are Asian, forty percent are white, while only ten percent are either Afro-American or Hispanic. These numbers remain fairly consistent over time, despite the fact that there are more coaching programs to try to help underprivileged youngsters see more success on the mandated test. The only exceptions to the admissions by test only policy is Project Discovery, a program that admits fifteen percent of each incoming class based on diversity rather than test scores.

Those who do gain admission to Stuyvesant have a proven record of success in all manners of life. It can brag of a number of Nobel Laureate alumni, but the famous graduates are not limited to science achievements. For example, the entertainment industry is well-represented by James Cagney, Tim Robbins, and Paul Reiser (Grunwald, 1994). Parents expect that the students will succeed, and the students expect it of themselves. The perennial success in the Westinghouse Talent Search is a prime example of the sort of

effort that these students give. In 1988, Stuyvesant students finished first and second in the competition- this was a first. In each year between 1988 and 1993, Stuyvesant had the highest number of students in the "honors group" of any school in the country. The depth of the projects completed by the students is amazing: One student "developed a method for isolating cancer cells in mice" (*Stuyvesant High School: A Tradition of Excellence*, nd, p. 4; *Journal of Scientific Research*, 1991). The SAT scores average 1270 in New York, where the overall average is 796 (Grunwald, 1994, p. 50).

These students' successes do not end with high school. Few schools can boast of a college admissions record as successful as Stuyvesant. In 1996, for example, 20% of those who applied were accepted at Yale, 10% at Princeton, 40% at Dartmouth, and 100% at Trinity. The numbers were similar for competitive schools across the board (Hanford et al., 1996, p.38).

The students achieve at a very high level by other measures as well. The math and debate teams are both very popular and successful, there are perennially National Merit and National Achievement Scholarship winners, and the school often leads New York State in the number of Regents Scholarship winners. In addition, Stuyvesant ranks at the top of the city lists of attendance figures (*Stuyvesant High School...*, nd, p. 7).

The curriculum supports this incredible level of academic achievement. Almost every department offers courses beyond the advanced placement level. There is also a wide variety of other courses such as art, music, computers, video, debate, law, ethics and philosophy. This, when coupled with the fact that students can take independent study classes, means that these students are exposed to an astonishing breadth of courses.

The experience doesn't end when the bell rings, however. There are 75 after school clubs, 30 sports, 25 publications, 6 music groups, Model Congress and United Nations,

and a developed Big Sibling advisory program (*Stuyvesant High School*, nd). It is very safe to say that most Stuyvesant students don't leave campus with the final bell.

These figures point to a school that is very successful. But there are other, more intangible, indications of the success of the school that are comforting to hear in an inner-city school. Stuyvesant provides a very "safe" atmosphere, where success can be achieved away from the scrutiny and socially inept feeling it usually accompanies. As one student said:

What's the alternative? I'll tell you honestly, I would go under if I had stayed in the neighborhood. I don't want to fight my way through drug pushers to get to class. In my old school, I'd have to defend myself from the other students and from the cops who are there to defend students from other students. At Stuyvesant, I don't have to worry about any of that. Here, I only have to worry about myself (Doyle, 1983, p. 18).

Stuyvesant provides an atmosphere that is unlike many other city schools. The facts and figures indicate that the school is clearly successful. There are many positives that it adds to the community and New York.

IV. What does it add to New York City?

It is very difficult to rank order the benefits to New York City, but the commitment to Stuyvesant among students, faculty and alumni is very near the top in any estimation. Parents are committed in ways that other schools don't enjoy. Renee Levine (1996), herself a member of the Parent's Association, told us that the Association is a very active organization, often using phonathons to raise money for extra curricular activities and textbooks. The teachers are committed to the idea of this excellent place. One teacher remarked in a newspaper article, "I love this place, and I wouldn't trade my job for anything in the world. I live in Rockland County and I would walk to work if I had to" (Maeroff, p. 3). This is the sort of dedication that New York would love to have from all of its teachers in any school. This dedication is also exhibited by students. Jon Abrams, a

senior, was quoted in an article as saying, "A Stuyvesant student is a special breed of student, trained in the art of enduring pain: the pain of cramming for exams, traveling hours to get to school, and living on about four hours of sleep a night" (Bille, Gastic et al., p. 3). These students put in extraordinary amounts of effort and are dedicated to success.

Stuyvesant offers the city an option for excellent students of all socio-economic backgrounds within the public system. The numbers discussed above indicate this. As Jerry Citron (1996), a biology teacher told us, "The school caters largely to top students with educated parents (middle and upper class). The school helps to keep middle class kids in the city." This shouldn't overshadow the fact that Levine told us that twenty percent of the kids are on the free lunch program. Thus, Stuyvesant does offer a solid school for students at a number of levels of the socio-economic scale and seemingly has a diversity that is unmatched by private schools: "And unlike white kids at private schools in Manhattan, those at Stuyvesant do not mingle with a handful of minority and scholarship students but are themselves the minority" (Grunwald, 1994, p. 50).

This opportunity is doled out in a meritocratic manner. As Levine says, "The test only discriminates students based on talent. If people in power ask us for special access privileges, we tell them their children must take the test, just like everyone else." As noted above, the genesis of the Hecht-Calandra Law was an attempt to challenge the test as a legitimate and fair method of selecting students for these schools. The legislators were so anxious to protect what they viewed as this meritocratic selection process that they labeled the impending challenge by the Chancellor, "the most insidious attack thus far upon the finest educational schools in New York City" (Ronan, 1971, p. 39). Stuyvesant officials talk disdainfully of any inferences that there ought to more accommodations made outside of the test. The opportunity is given in a purely meritocratic way, and because of this, Stuyvesant rewards success in a way that other schools don't.

Stuyvesant offers an education that many contend is unparalleled. The science and math courses are certainly excellent, and the lists of Westinghouse winners attests to that. However, the vast numbers of extracurricular options and upper level courses in the humanities signals the fact that the curriculum is generally excellent. Surely, the National Commission on Excellence in Education would support the way that this school strives for excellence in a number of ways.

Despite the number of offerings that are available to produce well-rounded children, Stuyvesant is above all an academically challenging and excellent place. As a former principal, Abraham Baumel said in 1990, "The intellectual climate they experience here they will never experience again in their lives, even at the finest colleges in America" (Phares, 1990, p. 5). Nobel Prize winner Roald Hoffman ('52) agrees when saying, "It was in Stuyvesant that I was surrounded by the greatest concentration of intellect that I have been in my life. Not even Columbia or Harvard exceeded it" (Mandell, 1992, p. 54).

There are other ways that the Stuyvesant influence weighs heavily in New York. Built by an unusual partnership between Battery Park City and the firm of Cooper, Robertson and Partners, the architects were required to spend time interviewing students and teachers as to the ideal construction of the school. This new type of school building became a prototype for a more efficient building plan (Muschamp, 1993). The school is a public space in a newly developed area that was originally intended for luxury housing. Thus, it was an attempt to "reinvent the waterfront" of that area (Muschamp, 1993, p. 40). This public position has meant that the school has been forced to open its doors to the neighborhood, sometimes to the point of serving as a "health club" (to use John Ferrandino's words) for the residents of that area. Stuyvesant is more to the Battery Park area than a school, and it serves a daily purpose, whether or not school is in session. While

this constant demand causes tensions between school officials and neighbors, the fact remains that Stuyvesant often serves as a model for school neighborhood relations.

Philosophically, at least to some, Stuyvesant represents something that is badly needed in a place with a school system as large and diverse as that of New York City. As Professor Tom Sobol (1996), former Chancellor of Education for New York State told us, "Choice should be maximized at the high school age. Why should a child who is ready to do calculus have to sit with a student who is only doing remedial math? How do they possibly benefit?" Schools such as Stuyvesant are an attempt to give these excellent students a place to go and thrive. Many would claim that by giving the city a place for these advanced students they serve an irreplaceable role because they keep these students in the system in schools that will handle their extraordinary needs.

In short, there are many benefits to New York from the presence of Stuyvesant and the other specialized schools. They represent their students well and are great exemplars of the entire system. As John Ferrandino (1996) said, "The city's specialized schools allow the city to say, yes, we do have problems, but we also have some of the best schools in the country." And Ed Koch (1996), the Mayor when the new Stuyvesant building was constructed, was adamant the schools show that New York City "has the best of the best, and is better than most."

Although these positives seem overwhelming, there are other parts to the story. In many ways, Stuyvesant has both obvious and subtle effects on the system in which the schools reside. These effects must be carefully weighed before a system decides to promote specialized schools.

V: Cautionary Words

The first, and in some ways most obvious, question that comes to mind is whether or not it is appropriate to have such an extravagant locale and building for a school that

operates within the public school system. Renee Levine says, "Stuyvesant is not a building but a state of mind" (Muschamp, 1993, p. 18). But is that appropriate in a system where other schools are obviously crumbling? Do the alumni occupy too great a role? Are they able to avoid conflict of interest when issues have to do with Stuyvesant? As Ferrandino (1996) said, "There are so many Stuyvesant alumni in key positions- it seems like they are half the judges in the state of New York- that it would have been very difficult to block the effort to build the new 150 million dollar building for the school." The people in the school almost speak as if they deserve it, but this raises real questions about the place of a specialized school in a system. It is important to consider what sorts of extras these buildings deserve or need. Does a student deserve a view of the Hudson River while others are taught in broom closets? On the day Stuyvesant High School opened its new campus, one district in Brooklyn reported twenty-five classes over the limit of thirty-two students (Berger, 1992, p. 1). Is this fair? Or is it the case that we ought to strive for all schools to be equally as posh? Any town must investigate thoroughly the position that a new specialized school would hold within its system before it makes the commitment.

This new building has proven to have obvious effects in student attitudes. Stephen Samuel, a senior the year the building opened said to a reporter on that day, "We deserve it. I'm not trying to hide the fact that I think I'm better than the rest..." (Dao, 1992, p. 6). The idea that some students deserve more than others is rightly offensive to many, and I would contend that it is not just the beautiful building or location that causes this attitude. Is it possible that such schools create this sort of attitude among their students? And if it is true, is this acceptable? Some would argue that the test scores or other means of admission justify this sort of response. And of course, it is easy to assert that private schools already create this sort of atmosphere; perhaps public school students deserve the right to feel this

way as well. Cities and towns must think about this possible side effect before they make the commitment to specialized schools.

There are other ways in which many would argue that these schools have a similar effect on the public system to that of private schools. Viewed this way, perhaps they are no more valuable to the system overall. As Jonathan Kozol (1991) states in *Savage Inequalities*, "They (specialized schools) are *intended* to be enclaves of superior education, private schools essentially, within the public system.... New York City's selective admissions program, says the principal of nonselective Jackson High, 'has had the effect of making Jackson a racially segregated high school....'" (p. 107). Clearly the administration at Jackson High feels that the system is not served by having these sorts of schools because they really only weaken those schools that remain nonselective. If they behave in this way, a city must decide if they add anything at all to the system as a whole?

So far our cautions have only dealt with the effects the schools have on the entire system, but it is worth examining what they may do for the students who actually attend. One of the fundamental issues at Stuyvesant is pressure; this is a reality that seems to pervade the lives of the students on a daily basis. And while the school tries to address the problem through peer counseling and other formal methods, it is still a concern for many involved with the school. Many students face the risk of being perceived as a failure, despite the crowing achievement of gaining admission to begin with. Ms. Heinemann, an English teacher gave voice to this concern:

These kids have to face the music every day. You see them crying in the halls and ask what's wrong. They say, 'I failed a math test.' The desire to succeed is so beaten into them. Their fear of failure becomes so great. It takes a very strong kid not to get lost at Stuyvesant (Doyle, 1983, p. 17).

The pressure is so great to succeed that failure becomes an option almost immediately, and many students are relegated to an anonymity to which they are unaccustomed. They are not used to being in the middle of the pack, and this position is certainly a shock for many. To many, anything less than the best is failure. As Ethan Winn, a 1992 junior reported, "The first day of school, you hear the principal say, 'You're the best school in the city, the country, the world.' What comes with that is wondering who's the best student. Kids get in the pressure loop. You have to be the best kid" (Dao, 1992, p. 6). This self imposed pressure is immense, especially when accompanied by the high expectations of parents. The result is many students who were probably on top of the world when accepted who quickly became disenchanted by the school and its atmosphere. Finally, these exceedingly intelligent youngsters find themselves to be failures with 90 averages. Before a city made the decision to promote these sorts of schools, they should consider the following profile:

Stephanie Funk, a five-foot-tall, baby-faced package of rampant enthusiasm, juggles extracurricular activities that include the tennis and volleyball teams, the ARISTA honor society, the Model United Nations team and Students Against Drunk Driving. Her grade point average is 99. What she knows about her closest competitor is his name and the fact that on a given day in December she is beating him by 27 hundredths of a point. What she was carrying around in her handbag last semester was Zantag, an ulcer drug (Grunwald, 1994, p. 59).

Given the mission discussed above, one would assume that the faculty would be outstanding pedagogical leaders, but it is important to note that the faculty at Stuyvesant is chosen through the same channels as the faculty at other schools. Therefore, the faculty is fairly representative of the teachers in New York at large. (John Ferrandino pointed out some ways around this system of teacher selection, but generally it is hard to circumvent.) Because of this, the teaching at Stuyvesant is less than exemplary, according to many sources. Ferrandino (1996) told us that teaching at Stuyvesant is an easy job because, "All

the adults at Stuyvesant have to do is step back and let the kids run the show. They are the show." And the students know this. One student in an English class we observed said, "The kids at the school are smarter than the teachers. And the teachers know it. We succeed because of ourselves." This gap between the quality of students and teachers means that the teaching is at times rudimentary. Jerry Citron says, "Private school kids often struggle at first because they were taught to think before they got here and when they arrive at Stuyvesant, many of the courses simply demand large amounts of memorization." Ferrandino (1996) was adamant that, "Stuyvesant is not even close to being the best pedagogical school. In fact, it's the most traditional of the specialized schools in New York City." Clearly, the pedagogy is not making an impact on the system. In fact, from comments like these, it is difficult to assess how the most famous member of the NCSSSMST will affect the teaching of science as a whole. The effects seem to be minimal; it raises questions about whether or not a school such as this can have the desired effects on the entire system, let alone the country.

There are inner conflicts at Stuyvesant that are worth noting. Its traditional existence as a science and math school is under assault from a number of different quarters. As the reputation of the school gets better and better, more people want to go there and they want the school to change its mission to more of general excellence school. Assistant Principal Gene Blaufaub (1996) told us the school is trying to respond :

The world is changing and the school needs to change to meet those demands. The changes are being driven by our customers. People view education differently now. They generally want a well-rounded education and a well-rounded lifestyle. We have no choice. We have to adapt. Stuyvesant needs to move slowly, but I must change. Our mission needs to be continually reexamined and revisited.

But there are people who would disagree with this. For example, Richard Rothenberg (1996) was adamant that the school maintain its traditional position as a math and science

school. The future of Stuyvesant will be determined largely in the way this debate is played out.

Above, I quoted Professor Tom Sobol (1996) saying that it is not to anyone's benefit to have a child who is ready to study calculus sitting next to someone in remedial math. And this is unquestionably true in math class. But any system considering specialized schools must ponder whether or not these students ought to be sitting together in English class. Perhaps there is much they can learn from each other; dividing them into separate schools may or may not be an appropriate response. And is the natural next step to divide all levels into their own schools? Should the people right below the admitted students have their own test? Any city must deal with this issue as well.

Finally, when Ed Koch says that these schools show that a city has a system that is "the best of the best, and better than most" is this true? Can one school make up for a flawed system? Or is Stuyvesant High School an attempt to hide the flaws of the system from view? Any city considering these schools must think of why they want them to be. Is it fair to represent a whole system through the successes of one school?

V: Conclusions

While this paper has tackled the issue of specialized schools as potential solutions to educational problems, it is important to discuss the social and political values that permit such schools. Stuyvesant makes a particularly interesting study of this topic. In fact, while other specialized schools do not seem to engender the same amount of attention, they all are open to criticisms. Stuyvesant, however, is controversial for reasons beyond the fact that it is a specialized school. Its plush building makes it a lightning rod for criticism of privilege when compared with the city's crumbling schools and, some would say, school system. It is fashionable in the 1990s to say that these sorts of monuments to excess and privilege (as many people have eloquently called Stuyvesant) is a product of the 1980s'

emphasis on individualism and money. Perhaps the parents that led the charge for the new building could have gained sufficient momentum in the 1960s or 1970s, but it is unlikely. The financial, political and cultural stars seem to have been aligned in a way that made the timing especially fortuitous.

However, I would contend that this answer is over-simplified. The nearly unanimous support of the political establishment, especially embodied by the actions of Mayor Koch and Governor Cuomo, indicates that this project represented something people believe in. Major political figures with aspirations to higher office, as both of these leaders were during this time period, do not pose on the cover of major newspapers with a building model if it will harm them politically (Perlez, 1987, p. B1). Our original research was conducted under the assumption that there must have been a noisy and active opposition to the project. We were struck by the lack of such. Such consensus in a city not known for compromise is rare. To truly understand the applicability to today, policy makers must wrestle with the question of whether or not these schools represent a larger system of values which are true across time and place.

It seems clear that Stuyvesant reflects values that are present in New York. It is a city with polar extremes, one that has both the beauty and the beast, so to speak. It claims to be meritocratic in the sense that anyone can ostensibly succeed and live a great life. Nowhere are the opportunities for quick fortune so apparent. These cases of success are highly publicized by the largest media establishment in the world. To a large extent, however, these successes are used to obscure the less successful. Therefore, the quotes we discussed above clearly show that many think that a school like Stuyvesant shows the city has the "best of the best" (Koch, 1996), and these quotes are perfectly in keeping with this idea of meritocracy. The opposite ends of the spectrum that are permitted to exist in New York City demonstrates that this sort of logic is acceptable, and in fact necessary, here.

Whether or not this sort of logic will work in your community, however, depends on whether or not these are traits that represent America on a larger scale.

Certainly compelling stances could be taken either way, but I would posit that America shares these values with New York. It is a country that has historically defended freedom throughout the world but has yet to achieve it within its own borders. It claims that it is a meritocracy, but it is hard to take this claim seriously in the face of the almost permanent underclass that has emerged in our cities. Our educational system embodies this dichotomy in unfortunate ways. The fact remains that minorities remain less able to receive quality education in almost all places. When the government ensured safety nets are removed, as they have been in admissions policies in California and Texas, minority college and law school applications drop quickly. What is left in the wake of these safety nets is a system of tests, grades and recommendations that many in our society do not have access to. The obvious result of this will be apparent in the years to come as the number of minority professionals decreases at a stunning rate. Unfortunately, taken this way, primarily middle class, test-based Stuyvesant may be an example of American meritocracy at its most realistic.

In my mind the solution to this is not to punish schools like Stuyvesant. Instead, we must continue to attempt to even the playing field so more may attend Stuyvesant, the University of Texas and the University of California. We must create systems of education that expect this sort of excellence from all of our students at every level. If we do, then these sorts of places are justified because they become an extension of an already excellent system. When all have access to equal opportunities, meritocracies work. If they don't, they serve to help only those who would succeed anyway.

In the spirit of *A Nation at Risk*, it is incumbent on all educators to investigate whatever solutions seem feasible. Specialized schools and their national network are viable

options in this debate that must be considered. However, they must not be judged only on the basis of test scores, college admissions and national contests. A city or town must proceed cautiously by examining the ramifications throughout the entire system. If they don't, and these schools are started in cities that aren't fully prepared, these effects may be much more negative than positive. Specialized schools that do not complement an already strong system may have little or no impact on general educational quality. The stakes are too important to allow this to happen.

VI: Bibliography

With a few additions, this bibliography outlines the major sources related to Stuyvesant High School and the NCSSSMST. Any cities or town considering such a school would do well to look at these sources in making a decision.

Interviews

Interviews were conducted with the following people. Any quotes or comments in the text from these people were obtained during these interviews.

Blaufaub, Gene. (1996, November 12). Assistant Principal, Guidance, Discipline, and Curriculum, Stuyvesant High School.

Very involved in all of the current curricular debates; he is a good, candid source that will play a major role in any of the changes that the school makes. He feels that he was hired to push the school to meet the needs of the changing times.

Citron, Jerry. (1996, November 12). Biology Teacher, Stuyvesant High School.

A source that gave good insight into the view of science teachers and the daily life of the students.

Ferrandino, John. (1996, November 26). Former Superintendent of High Schools, New York City.

Involved in New York City Education since the 1960s, he has had a number of jobs that give him an excellent understanding of the position of specialized schools. Extremely frank about the condition of the New York City schools.

Green, Carol. (1996, November 23). Assistant Principal for Supervision, Bronx Science High School, Past President of National Consortium of Specialized Schools of Math, Science and Technology.

Provided interesting information about the nature of the national organization. Adamant that Stuyvesant not be used as a representative of all of these schools.

Levine, Renee. (1996, October 29; November 12). Building Supervisor, Stuyvesant High School.

Extremely helpful in all areas of our investigation. As a former parent and someone who was instrumental in the construction of the new building, she can shed light on anything that has happened at Stuyvesant since the late 1970s.

Lewis, Michael. (1996, November 12). Senior Student, Stuyvesant High School.

Gave a different perspective that demonstrated the dynamic nature of the student body.

Rothenberg, Richard. (1996, November 12). Math and Science Assistant Principal, Stuyvesant High School.

A member of the "old guard," he strongly believes that Stuyvesant must remain a math/science school.

Shapiro, Steven. (1996, November 12). English Department Assistant Principal, Stuyvesant High School.

Provides an interesting contrast to Dr. Rothenberg, he sees Stuyvesant's mission as producing "caring and compassionate" kids. These two exemplify the debate over curricular emphasis that will occur in the coming years.

National Publications

"A Deal to Open Stuyvesant's Doors (and Pool)." (1993, September 19). *New York Times*, sec. XIII: 6.

Background information on the relationship between Stuyvesant High School and Battery Park.

Berger, Joseph. (1992, September 10). "On First Day for Schools, Many Lessons." *New York Times*, sec. B: 1, 6.

Interesting to use as a comparison between the new Stuyvesant High School building and the condition of the "regular" schools on the same day.

Buder, Leonard. (1971, May 17). "Board Asks Defeat of a Bill Retaining 4 Specialized Schools' Entrance Tests." *New York Times*, sec. 1: 26.

Outlines the debate between the two sides of the issue. Provides a good summary of the arguments of both sides and describes the racial debate very well.

Clines, Francis X. (1971, May 20). "Assembly Votes High School." *New York Times*, sec. 1: 58.

Describes the ultimate decision to retain testing as a procedure for admission. Gives a good discussion about the tense debate and accusations that were traded by the opponents.

Dao, James. (1992, September 10). "Brainy Bunch Begins Anew." *New York Times*, sec. B:6.

Describes Stuyvesant High School on the first day in a new building. Gives very telling reactions of students, staff and parents.

Dillon, Sam. (1993, January 28). "Building Flaws Tarnish Stuyvesant's Showcase." *New York Times*, sec. B: 1,2.

Talks about some of the problems in the early life of the new building.

Doyle, Denis P. and Cooper, Bruce S. (1983, November). "Is Excellence Possible in Urban Public Schools?" *American Education*, 16-26.

Provides an interesting analysis of what it takes to provide "excellent" schooling in the inner-city. Stuyvesant is used as a case study and given extensive treatment.

"Girl Challenges Stuyvesant High's All-Boy Policy." (1969, January 21). *New York Times*, sec 1: 37.

Describes the original challenge of Alice De Rivera to the single-sex policies of Stuyvesant High School.

Grunwald, Lisa. (1994, October). "Is This the Best High School in America?" *Life Magazine*, 49-60.

An excellent portrait that uses interviews with students, faculty, and alumni to describe the school fully. Gave Stuyvesant a national spotlight for its accomplishments.

Impacting Scientific Leadership for the 21st Century: A Membership Profile. (1993).
Lynchburg, VA: National Consortium for Specialized Secondary Schools of
Mathematics, Science and Technology.

Describes the different schools in the national consortium. Also provides mission statements for the organization as a whole and each school.

Jacoby, Susan. "Elite School Battle." (1972, May 28). *Washington Post*, sec. B: 4,5.
Good background information on the controversy over specialized schools in urban areas.

Kozol, Jonathan. (1991). *Savage Inequalities: Children in America's Schools*. New York: HarperPerennial.

Has a specific section in New York City schools that provides a great contrast to the beauty of the new building (pages 98-110). This is a must read to understand inner-city schools, as this book brings you inside the daily lives and struggles of a number of students.

"Low Marks for Albany." (1971, June 1). *New York Times*, sec. 1: 38.

An editorial that critiques the 1971 accomplishments of the state legislature in its policies towards education. This article is mildly critical of the Hecht-Calandra Law.

Maeroff, Gene I. (1982, March 2). "An Emphasis on Excellence." *New York Times*, sec. C: 1, 3.

Another article that gives good background on the general excellence of the school.

Mandell, Jonathan. (1992, June 24). "Excellence with Attitude." *New York Newsday*, 54-57.

Background information that provides a nice discussion of the "attitude" that pervades the Stuyvesant landscape.

McFadden, Robert D. and Shapiro, Eben. (1992, September 8). "Finally, A Facade to Fit Stuyvesant." *New York Times*, sec. B: 1,6.

A general description of the new building as it readied to open for its first day.

Muschamp, Herbert. (1993, November 7). "Enlightenment on the Harbor." *New York Times*, sec. 4: 18, 19.

A good description of the building and its place in Battery Park. Describes the deals that were made and compromises necessary in building this beautiful building.

Muschamp, Herbert. (1993, June 6). "On the Hudson, Launching Minds Instead of Ships." *New York Times*, sec. II: 40.

See above, provides more of the same about the school. An excellent writer that gives a real feel about the position held by an elite school on prime land.

Newman, Maria. (1995, March 18). "Cortines Has Plan to Coach Minorities into Top Schools." *New York Times*, sec. A:1.

Describes the origins of the Math-Science Institute that tries to help students from under-represented districts succeed on the test.

Nossiter, Adam. (1995, December 3). "Anxiety 101: Taking Test to Attend Stuyvesant." *New York Times*, sec. 1:51.

An excellent essay about the anxious moments proceeding and on test day.

Perlez, Jane. (1987, October 2). "A New School For Stuyvesant to be Speeded." *New York Times*, sec. B: 1,9.

Gives the original announcement for the plans of the new building. Clearly outlines the expectations for the construction, cost and timetable.

Phares, Tom K. (1990). *Seeking- and Finding- Science Talent*. Westinghouse Electric Corporation.

Describes the Westinghouse Science Talent Search and discusses Stuyvesant's prominent place in the award's history.

Reckson, Alyce. (1983, April 24). "Girl in a 'Boys' School: The Way It Was." *New York Times*, sec. 12: 76.

A good recap of the first class of girls at Stuyvesant from a member of this first class.

Ronan, Thomas P. (1971, March 31). "Legislature Receives Measures Implementing Governor's Welfare Reforms." *New York Times*, sec 1: 39.

Gives a short description of the Hecht-Calandra Bill that as passed to ensure that admissions testing would remain the criteria for admission.

Steinberg, Jacques. (1996, November 24). "High Schools Get Less Aid than Elementary and Middle Ones." *New York Times*, sec B: 37.

This article was used to get our budget figures, etc.

The National Commission on Excellence in Education. (1994). *A Nation at Risk: The Full Account*. Portland: USA Research, Inc.

An account of the problems of education in the United States that everyone must read.

Tomasson, Robert. (1969, January 23). "Girl Wins a Point on Entry into School." *New York Times*, sec. 4: 57.

Written during the suit brought by Alice De Rivera against the school.

Treby, Guy. (1983, February 1). "Valedictorians Since First Grade." *Village Voice*, 28.

A very different article that describes some of the graduates and their possible fates.

White, Joyce. (1982, February 26). "Our schools have had their ups and downs, but...Stuyvesant remains great." *Daily News*, back page, 3.

General information on the quality of Stuyvesant.

Stuyvesant Publications

Gastic, Billie, James Park and Emily White. (1994). *The 1994 Edition of the Big Sib. Handbook*. New York: Alpina Publishers.

Published every two years by students, this serves as a guide for incoming students. Gives great information on every facet of school life from clubs to transportation and shows the caring bond among students of all ages.

Leung, Lucinda and Annie Yang. (1991). *Stuyvesant High School Journal of Student Science Research*. New York: Stuyvesant High School Biology and Earth Science Department.

An amazing compilation of the science research done by a particular class. Shows the depth of the research being completed.

Stuyvesant High School: A Tradition of Excellence. (n.d.). (United States): n.p..

A short book that outlines the history and traditions at Stuyvesant.

Stuyvesant High School: The Story of Excellence. (n.d.). New York: Board of Education. A fund-raising document that shows the commitment of the school to outside sources of income.

Unpublished Work

Hanford, Seth; Armando Sanchez; John Taylor; Duncan Wilson. "Private schools, essentially, in the public sector": *An Examination of Stuyvesant High School and Other Specialized Secondary Schools of Mathematics, Science, and Technology*. (n.d.). (United States): n.p..

Presents our original case study and statistics.

Board of Education Documents Teachers College Library contains these resources.

City of New York Board of Education Journal. (1904). New York: Board of Education.

Mantel, Herman E. (1934). "A Pamphlet from Board of Education to School Principals." New York: Board of Education.

"The High Schools of New York City." (1928). New York: Board of Education.

"The Public High Schools of the City of New York." (1942). New York: Board of Education.

"Information Regarding the High Schools and Vocational Schools of New York City." (1917). New York: Board of Education.

Tenth Annual Report of the City Superintendent of Schools to the Board of Education of the City of New York. (1908). New York: Board of Education.

This report was published annually through 1930.

These sources were used as background to retrieve historic mission statements. They are also useful in gaining an understanding of the changes that took place in the high schools during the early part of the century.

Web Sites

Two web sites were of particular use when studying the National Consortium of Specialized Secondary Schools of Mathematics, Science and Technology:

1. www.inmind.com/schools/ncsssmst/

The official web site of the National Consortium, this site provides information about the organization itself and its mission statement. Also gives information about the schools themselves.

2. www.depauw.edu/acf/atendees.html

A comprehensive list of the member schools. Gives contact names, addresses, phone numbers, and email addresses.